

DALEA ANALILIANA (FABACEAE: AMORPHEAE), A NEW SPECIES FROM THE NORTHWESTERN SIERRA MADRE OCCIDENTAL, MEXICO

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ABSTRACT

Dalea analiliana is described as new from the vicinity of Yécora in the Sierra Madre Occidental of eastern Sonora, Mexico. This perennial is related to *D. nelsonii* Greene, but differs in its white flowers, the presence of glands on both surfaces of the leaflets, and its more northern distribution. *Dalea analiliana* occurs in open grasslands and along roadsides in oak and oak-pine forest habitats similar to those described for *D. nelsonii*.

RESUMEN

Se describe la especie nueva *Dalea analiliana* de los alrededores de Yécora en la Sierra Madre Occidental al oriente de Sonora, México. Esta planta perenne está relacionada con *D. nelsonii*, pero se diferencia por sus flores blancas y la presencia de glándulas en ambas superficies de las hojuelas y su rango geográfico más al norte. *Dalea analiliana* ocurre en pastizal y a orillas de la carretera con zacates en bosques de encino y pino-encino, hábitats similares a los descritos para *D. nelsonii*.

Key Words: *Dalea*, Sierra Madre Occidental, North American floristics, new species.

Access to the northern Sierra Madre Occidental has progressively improved as Mexico has developed good roads in the region during the past two decades. This is particularly so with the completion of Mexico Highway 16 between the cities of Chihuahua and Hermosillo in the states of Chihuahua and Sonora respectively, finally providing easy access to Yécora approximately three centuries after the founding of the village. The vegetation has been described along the elevational transect made by this highway (Búrquez et al. 1992). More recently, several floristic projects have been completed in this general region (Estrada-C. et al. 1997; Laferrière 1994; Reina-G. et al. 1999; Spellenberg et al. 1996; Van Devender et al. 2003, 2005), resulting in the discovery of nearly 30 new taxa. The areas around Basaseachic and Yécora have been particularly rich in novelties. These restricted and more or less complete floras built upon the foundations laid by the early efforts of several botanical explorers of the general region (Gentry 1942 [revisited by Martin et al. 1998]; LeSueur 1945; White 1948). Identification of species of *Dalea* in the region was facilitated by the detailed revision of that genus and allied genera by Rupert Barneby (1977).

The new *Dalea* described herein is readily assignable to the section *Thornbera* (Rydb.) Barneby by its perennial, herbaceous habit, the 10-merous androecium with epistemonous petals perched half-way between the hypanthium and anthers, and the deeply separated filaments in a tassel about as long as the sheath (Barneby

1977). This is the tenth known species in the section as it was treated by Barneby. The specific epithet honors Ana Lilia Reina-Guerrero who, as far as is known, first collected the species with her husband, Tom Van Devender, in mid-September, 1999. Ms. Reina has studied medicinal plants of the Mountain Pima Indians in the Municipio de Yécora, and is a keen student of the flora of eastern Sonora and the Arizona-Sonora border region.

Dalea analiliana Spellenb., sp. nov. TYPE: Mexico, Sonora, Municipio de Yécora, cemetery in Yécora, 28°22'30"N, 108°56'W, very common herbaceous perennial in grassland; flowers white; 17 Sep 1999 (mid-flower), T. R. Van Devender 99-694, A. L. Reina-G. (HOLOTYPE: MEXU; ISOTYPES: ANSM, ARIZ, CIIDIR, MEXU, NMC, NY, UC, USON). (Figs. 1, 2).

Dalea analiliana Spellenberg, sp. nov.

Plantae characteres sectionis *Thornbera* (Rydb.) Barneby praebentes (Barneby 1977, p. 168), ab specie ceteris sectionis differt combinatione sequente characterum. Plantae glabrae usque ad spicas. Caules subteretes leniter vel moderate verruculosi glandibus elevatis. Foliola paribus 8–13, glandulopunctatae in superficiebus ambabus, foliolium terminale par sum pari postremo insertum (trifolium formans). Tubus calycis penitus recessus post vexillum, tubus (metiens ad sinum dorsalem) 2.5 mm longus, glaber exter, interne dentes sericeo-pilosi, orificium itaque aspectu dense ciliatum, intervallis inter costas glandibus



HOLOTYPE

Dalea analiliana Spellberg

R. Spellberg 2000

FLORA OF THE MUNICIPIO DE TECORA
SONORA, MEXICO*Dalea* sp., aff. *D. uruguayana* Greene
det. R. Spellberg, 2000Cenotepec, in Tecora 28°22'30"N 109°56'W;
1540 m elevation.Very common herbaceous perennial in
grassland; flowers white.T.R. Van Devender 39-404, A.L. Reina G.
17 September 1999

FIG. 1. Photo of holotype specimen of *Dalea analiliana* to be deposited at MEXU, showing habit, perennial root, and multiple stems.

parvulis aurantiacis pustuliformibus in ± 2 series irregularibus; dentes calycis inequales, dentes dorsales anguste triangulares 0.7 mm longi, dentes laterales late triangulares 0.5 mm longi. Petala omnino alba, vexillum 6.6 mm longum, ala 4.2 mm longa, carina alis \pm aequans. Fructus glabri, glandibus paucis minutis distaliter instructi.

Plants perennial, herbaceous or weakly suffrutescent, with multiple stems arising from the crown of a woody root, glabrous to the spikes; **stems** ascending, 25–50 cm long, branched in the distal half, usually yellowish green, sometimes blushed with brownish-purple, round or very

slightly ridged, lightly to moderately verruculose with round orangish glands 0.1–0.2 mm diam. densest near the nodes and on the peduncles; **stipules** narrowly linear-caudate, 1.5–3.5 mm long, yellowish, reddish or brownish; **leaves** green, imparipinnate, 3–30 mm long, subsessile or petiolate to ca. 1 mm, the rachis unwinged or with very narrow, inconspicuous green margins, intrapetiolar glands usually fused to form 1 minute gland, post-petiolar glands 2, hemispheric, orange, ± 0.1 mm diam.; **leaflets** (5–) 8–13 pairs, narrowly elliptic or elliptic-oblongate, 1.8–5.5 mm long, flat or loosely folded, more or

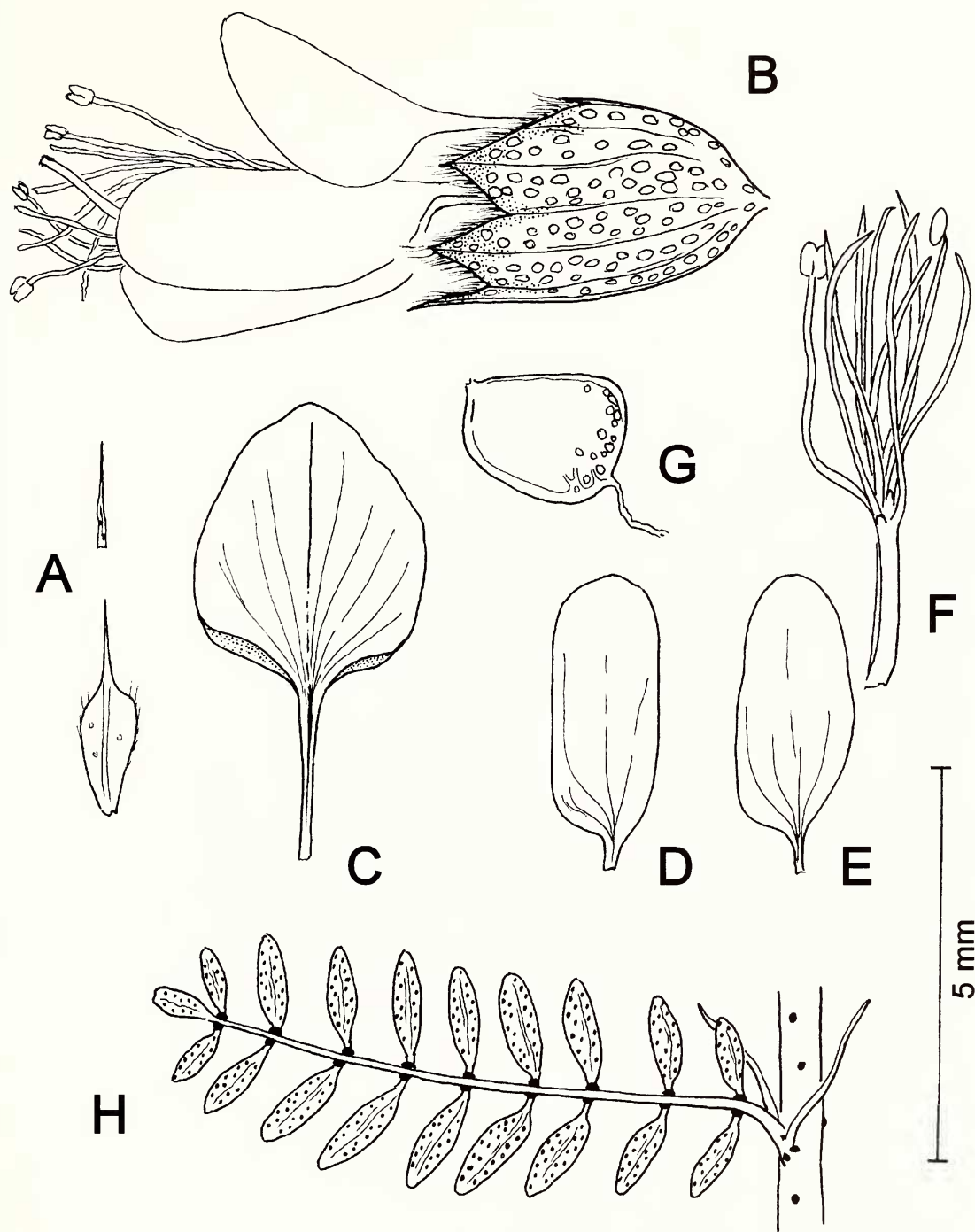


FIG. 2. Flower and leaf of *Dalea analiliana*. A. Floral bracts, range of variation; B. Flower, lateral view; C. Banner, ventral view. D. Wing petal; E. Keel petal; F. Staminal tassel, most anthers having dropped, showing epitsemonous petal-attachment scars midway on tassel; G. Fruit, lateral view, the withered style still attached; H. Leaf.

less keeled dorsally by the midrib, bluntly acute, rounded, or minutely emarginated, prominently punctate on both surfaces with round, dark olive-green or blackish-purple glands ± 0.05 mm diam., the terminal leaflet inserted at the level of

the last pair and forming a trefoil; **peduncles** terminal to the main axis and all branches, 1.5–8 cm long; **spikes** dense, narrowly conic in bud and flower, \pm cylindric in fruit, without petals 8–9 mm diam., the puberulent axis (1) 1.5–7 cm

long; **bracts** linear-lanceolate to narrowly lance-caudate, 3–4.5 mm, sparsely glandular, purplish-black on the caudate apical portion, the bracts in basal the portion of spike \pm persistent, those distally deciduous at time of anthesis, basal bracts glabrous or glabrate on dorsal surface, minutely puberulent on ventral surface, the more distal bracts smaller and often \pm puberulent dorsally; **calyx** 3.0–3.8 mm long (to the longest tooth), broadly ovoid, glabrous externally, the teeth silky-pilose within and the orifice therefore densely ciliate, the tube (as measured to a dorsal sinus) 2.2–2.5 mm long, as measured to the deeply recessed ventral sinus behind the banner \pm 1 mm long, purplish-black along the subfiliform ribs and on the teeth, the plane intervals between the ribs charged with 1–3 irregular rows of orange oval blister glands \pm 0.1 mm wide; teeth triangular or triangular-acuminate, slightly unequal, the dorsal tooth the narrowest and longest, 0.9–1.1 mm long, the lateral pair slightly shorter and proportionately broader; **petals** white (yellow according to one specimen label), eglandular, the epistemonous (attached to the androecium) ones attached just below, or the inner pair slightly above, the separation of the filaments, ca. half-way between hypanthium and anthers; banner 6.0–6.6 mm long, the claw 2.2–2.6 mm, the broadly ovate, rounded or very shallowly emarginate, slightly reflexed blade 3.8–4 mm long, 3.2–3.3 mm wide; **epistemonous petals** similar, the inner pair sometimes a little larger, the blades elliptic oblong to oblong, 3.5–3.7 mm long, 1.1–1.6 mm wide, obliquely contracted at base into a claw 0.6–1 mm long; **androecium** 10-merous, 5.8–6.8 mm long, the filament free for 3.5–4.2 mm, the connective tipped with an orange-yellow gland, the pale yellow or whitish anthers 0.4–0.8 mm long; **pod** 2.3–2.5 mm long, obliquely obovoid to obliquely trapezoidal in profile, the short style base terminal near the ventral edge, the dorsal edge and prow with a low keel, the valves hyaline except at the thinly herbaceous, sparsely gland-dotted tip.

Phenology.—Flowering in September.

Distribution and habitat.—As far as is known, *Dalea analiliana* is restricted to the Municipio de Yécora in Sonora, northwestern Mexico, with all collections from near MEX Highway 16 from 6.5 km W of Yécora to 4.8 km E of Maycoba (a linear W-E distance of ca. 37 km, approximately bounded by 28°21'–24', 108°37'–58'), where it occurs in open grassy fields on consolidated mudflows and along roadsides in areas of oak and pine forest, 1500–1740 m elevation. Henrickson (1999) reviews the history of the mudflows in the area and generally describes the vegetation on these flows and the surrounding area.

Paratypes (all Sonora, Mpio. de Yécora): Ca. 2.5 km S of Yécora, grasslands W of Arroyo El Toro, 28°20'54"N 108°56'W, 1540 m elev., occa-

sional, flowers white; 7 Sep 1996 (early flower), *A. L. Reina-G.* 96-477 et al. (ARIZ, MEXU, NY, TEX); La Otra Banda (Pima Indian portion of Yécora, open pine-oak forest on locally bar volcanic ash hilltops, 28°21'45"N, 108°55'W, 1560 m elev., uncommon herbaceous perennial, 19 Nov 1997 (fruit), *A. L. Reina-G.* 97-1524 et al. (NY, WS); cemetery in Yécora, 28°22'30"N, 108°56'W, 1540 m elev., common herbaceous perennial in grassy field, flowers white, 17 Sep 1998 (early flower), *A. L. Reina-G.* 98-1206, *T. R. Van Devender* (NMC, WS); 12.4 km E of Yécora on MEX 16, pine-oak forest on steep cliff base; 28°22'50"N, 108°50'41"W, 1600 m elev., solitary herbaceous perennial on disturbed roadside, flowers white, 13 Sep 1999 (early flower), *A. L. Reina-G.* 99-536, *T. R. Van Devender* (NMC, RSA); Yécora, 28°22'25"N, 108°55'30"W, 1540 m elev., abundant herbaceous perennial on roadside, flowers white, 13 Sep 1999 (late-flower), *A. L. Reina-G.* 99-547, *T. R. Van Devender* (ARIZ, CIIDIR, MEXU, MO, NMC, US, USON); 4.8 km E of Maycoba on MEX 16, grassy valley in oak woodland, 28°24'01"N, 108°37'17"W, 1600 m elev., locally common on disturbed grassy roadside, flowers white, 15 Sep 1999 (late flower), *T. R. Van Devender* 99-604, *A. L. Reina-G.* (ARIZ, MEXU, NMC, SD, TEX); 4.5 km W of Maycoba on MEX 16, oak woodland/grassland; 28°24'14"N, 108°41'36"W, 1500 m elev., uncommon herbaceous [perennial] on disturbed roadside; flowers white, 15 Sep 1999 (mid-flower), *T. R. Van Devender* 99-609, *A. L. Reina-G.* (ANSM, ARIZ, ASU, IBUG, NMC); 6.5 km W of Yécora on MEX 16 (km 273), pine-oak forest, 28°21'48"N, 108°58'55"W, 1740 m elev., solitary herbaceous perennial on roadside; flowers yellow, 17 Sep 1999 (late flower), *T. R. Van Devender* 99-698, *A. L. Reina-G.* (ARIZ, BRIT, NMC); Yécora, near cemetery, 22°22'25"N, 108°56'W, 1540 m elev., locally common herbaceous perennial in grassy field; flowers white, 2 Oct 2000 (mid-fruit), *A. L. Reina-G.* 2000-858, *T. R. Van Devender* (ASC, ENCB, F, K, NMC).

The correct identification and classification of *Dalea analiliana* has been in question from the time of the first collections. Rupert Barneby, in a communication to Dr. Van Devender, suggested that it might be near *D. urceolata* Greene, a polymorphic annual in the section *Dalea*, noting at that time that it was probably undescribed. Using Barneby's detailed keys (1977), I identified collections to be near *D. urceolata* (based on the deep notch on the calyx, behind the banner) in 2000, or near *D. ananassa* Barneby, in the section *Thornbera* in 1999 (based on perennation, proportions of the androecium, and glabrous foliage), all the time attempting to avoid the decision that this was, indeed, an undescribed taxon. Ultimately that position

could not be supported. The placement of the species is clearly in the section *Thornbera*. Within that section, *D. analiliana* is easily to near *D. nelsonii* (Rydb.) Barneby (in Barneby 1977), where one stalls on flower color (blue for *D. nelsonii* vs. white for *D. analiliana*), range (southern Chihuahua and adjacent Durango vs. eastern Sonora), the distribution of glands on the leaflets (abaxial versus both surfaces), and among other mensural details in the descriptions. The deeply cleft calyx aligns *D. analiliana* with the previously monotypic series *Nelsonianae* Barneby (which contained only *D. nelsonii*), adding a second, geographically adjacent species to the series.

ACKNOWLEDGMENTS

I thank Guy Nesom for providing the Latin description, Ana Lilia Reina-Guerrero for help with the translation of the Spanish abstract, and she and Tom Van Devender for providing specimens for study. Tom Zanoni discovered and kindly made available a draft English description for this taxon, prepared by Rupert Barneby, which was filed among *Dalea urceolata* specimens. My wife, Naida Zucker, was most helpful in electronic manipulation of images and text.

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